Procedures

The Eight Step RSA Process
Responsibilities

RSA Team
Design Team / Project Owner

1. Identify project
2. Select RSA team
3. Conduct start-up meeting
4. Perform field reviews
5. Conduct analysis and prepare report
6. Present findings to Project Owner
7. Prepare formal response
8. Incorporate findings
Responsibilities

1 Identify project
2 Select RSA team
3 Conduct a start-up meeting
4 Perform field reviews under various conditions
5 Conduct audit analysis and prepare report of findings
6 Present findings to Project Owner
7 Prepare formal response
8 Incorporate findings

RSA Team
Design Team/Project Owner
Step 1: Identify the Project

Design stage project

In-service project
Candidates for In-service RSAs

High-crash sites

High-profile sites

Changed traffic characteristics
Candidates for Design-stage RSAs

- Safety-oriented
- High-profile
- Complex design

Step 1
Responsibilities

1. Identify project or
2. Select RSA team
3. Conduct start-up meeting
4. Perform field reviews under various conditions
5. Conduct audit analysis and prepare report of findings
6. Present RSA findings to Project Owner
7. Prepare formal response
8. Incorporate findings

RSA Team
Design Team/Project Owner
Select RSA Team

- Independent
- Experienced
- Multi-disciplinary
Select the RSA Team: Core Skills

Step 2

Operations

Geometric

Road users/human factors
Select RSA Team: Supplementary Skills

- Human factors
- Specialists
- Enforcement
- Maintenance
Interdisciplinary RSA Team: Composition and Size

- local agency staff
- exchange staff from another local agency
- consultants
- combination of above

3-member audit team
Responsibilities

1. Identify project
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RSA Team
Design Team/Project Owner
The Start-up Meeting: Provide Project Information

- Crash history
- Traffic volumes
- Aerial photographs
- Design drawings
- Background reports
- Design criteria
The Start-up Meeting

- Communicate project concerns
- Review steps in RSA
- Review safety concerns with similar projects
- Discuss schedule
- Provide contact info
Responsibilities

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Sardine Canyon deaths

Wellsville

1 killed 1/27/99
4 killed 12/26/97
1 killed 10/16/96

Wellsville Canyon

91

The Big Curve

Dry Lake

Sardine Summit

89

Dry Canyon

Mantua Reservoir

2 killed 1/23/99
2 killed 9/17/98
1 killed 3/8/97

To Brigham City

Box Elder Canyon

Mantua
Step 4: Perform Field Reviews

- Design-stage
- In-Service
Team in One Vehicle
Perform Field Review: Preparation for the Field Review

- Review available crash data
- Arrange transportation
- Designate a secretary and photographer
(2) Field Reviews

- Observe road user characteristics.
- Observe surrounding land uses.
- Observe link points to the adjacent transportation network.
Perform Field Review:
Common Items to Look For

- Sight distance obstructions
- Pedestrian and cyclist conflicts
- Visual clutter
SIDEWALK CLOSED
(2) Field Review

- Drawing, aerial photographs
- Camera still/video
- Measuring wheel, stopwatch
- High-visibility vests
(2) Field Review

Look for:

• sight distance obstructions

• roadside hazards

• driveway issues
Perform Field Review:
Variable Conditions to Observe

- **Peak and off-peak traffic periods**
- **Dry and wet weather conditions**
- **Day and night conditions**
Perform Field Review: Up Close and Personal

Walk the site!
(2) Field Review

Walk the audit site.
Responsibilities

- RSA Team
- Design Team / Project Owner

1. Identify project
2. Select RSA team
3. Conduct a start-up meeting
4. Conduct RSA analysis
5. Present RSA findings to Project Owner
6. Conduct audit analysis and prepare report of findings
7. Prepare formal response
8. Incorporate findings
Step 5: Conduct RSA Analysis

- Identify and prioritize safety concerns
- Develop suggestions for reducing the degree of risk
- Compose presentation of early findings
RSA Analysis:

- Schedule work sessions
- Assemble RSA information
- Gather references
- Appoint a coordinator and secretary
Resources and References

- FHWA Road Safety Audit Guidelines
- A Policy on Geometric Design of Highways and Streets 2004
- Pedestrian Road Safety Audit Guidelines and Prompt Lists
- Roadside Design Guide
- Your State’s Geometric Design Guide

Step 5

4-40
Analysis: The Process

Step 5

1. Inventory information
2. Review information
3. Identify safety concerns
4. Prioritize safety concerns
5. Mitigate safety concerns
6. Compose preliminary findings
Analysis: Phase 2
Systematically Review Information

- Thoroughly review all data
- Think in terms of GORE
- Crash history (existing roads)
- Expected crashes (design-stage)
Analysis: Crash History

LEGEND
- Injury
- Damage Only
X - Pedestrian
■ - Fixed Object
☑ - Cyclist

41 of 42 Collisions Shown
The RSA team must ask how often each safety issue may contribute to a crash.

**Prioritize Safety Issues: Crash Frequency**

- **Frequent (C)**
- **Occasional (B)**
- **Rare (A)**

**RISK CATEGORY**

- A = Lowest priority
- F = Highest priority
The RSA team must ask how severe the crashes related to the safety issue may be.

Prioritize Safety Issues: Crash Severity

<table>
<thead>
<tr>
<th>Negligible (A)</th>
<th>Low (A)</th>
<th>Medium (B)</th>
<th>High (C)</th>
</tr>
</thead>
</table>

Crash Severity
Prioritize Safety Issues: Risk Matrix

**RISK CATEGORY**
A = Lowest priority
F = Highest priority

**Crash Frequency**
- Frequent
- Occasional
- Rare

**Crash Severity**
- Negligible
- Low
- Med
- High

- A
- B
- C
- D
- E
- F

Step 5
Mitigate Safety Concerns: Suggestions Appropriate to Project Stage

- **Short term solutions include:** maintenance, vegetation, changing signage or pavement markings, **Enforcement & Education**

- **Long term solutions include:** flattening a curve or modifying a roadway’s vertical alignment, **Enforcement & Education**
Mitigate Safety Concerns: Design-Stage

Early design stage: alignment changes

Later design stage: signing improvements
Identify safety successes
Briefly describe safety concerns
Identify potential conflicts
Suggest mitigation
Responsibilities

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The RSA Findings Presentation

- Discuss safety concerns
- Discussion of safety concerns
- Clarify findings and suggestions
- Assist project owner in making best choices
The RSA Findings Presentation: Factor in the Feedback

- Review and revise findings where appropriate
- Initiate formal report
- Summarizes the project
- Identifies team
- Documents site visits
- Documents results
- Identifies and prioritizes safety concerns
- May include suggestions for improvements
The RSA Findings Presentation:
Formal Report

Design-stage Report Layout Sample

Safety concern
Description
Prioritization (optional)
Suggestions (optional)
The RSA Findings Presentation: Formal Report

Safety concerns

- The presence of left-turn vehicles in the shared lane reduces visibility of opposing through vehicles, resulting in left-turn head-on and secondary rear-end and sideswipe collisions.
- Vehicles are unable to clear the intersection in time due to the lack of an all-red interval, resulting in angle collisions.
- Vacant corner lots and faded pavement markings render the intersection inconspicuous. Drivers fail to anticipate the intersection and enter during the red phase, causing angle collisions.

Suggestions

- Restripe all pavement markings, including crosswalks.
- Provide eastbound and westbound left-turn lanes and phases.
- Correct westbound secondary signal head alignment.
- Restrict parking near intersection to accommodate left turn lanes.
- Provide signal ahead sign (W3-3) at eastbound and westbound approaches.
- Provide lane markings at North-South Road.
- Remove turn restriction signs.

CORRIDOR-WIDE ISSUES:
1. Visibility of signal heads is limited by the use of 8-inch signal lenses, diagonal span wires, and the absence of low-level signal heads.
2. Faded pavement markings provide limited guidance to drivers.

CORRIDOR-WIDE COUNTERMEASURES:
1. Install 12-inch lenses on primary signal heads.
2. Mount primary signal heads with reflective yellow backboards in a box span configuration.
3. Provide far-left low-level signal heads on all approaches.
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Responses

☐ Short Range
☐ Paint, Signage
☐ Mid-Range
☐ Contour Bank
☐ Long-Range
☐ Realign Skewed Intersection
Adequate Response

“While we agree with the need to realign the skewed intersection, the realignment cannot be achieved within the existing right-of-way. Realignment will require the purchase of property at a cost of about $500,000, representing about 15 percent of the total annual transportation budget. The acquisition of the required property may be considered in future budgets.”
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Step 8: Implementation of Improvements

Implementation - may depend on policy, manpower, and/or funding.
Implementation of Improvements

Pre-construction

Changes to design drawings

Post-construction RSAs:

Incorporate improvements in operating budgets or maintenance programs
RSAs: Conclusions

Making Your Roads Safer